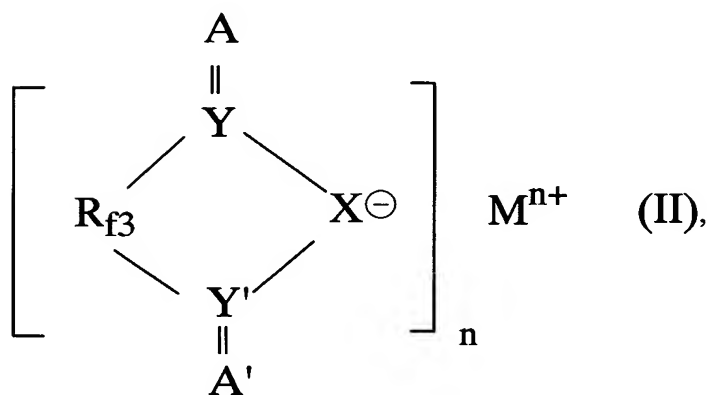
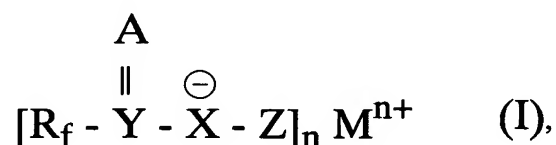


## CLAIMS

### WHAT IS CLAIMED IS:

1. A functional fluid composition comprising:
  - (a) a basestock comprising a phosphate ester, and
  - (b) an effective erosion inhibiting amount of at least one erosion inhibitor selected from compounds represented by the formulas



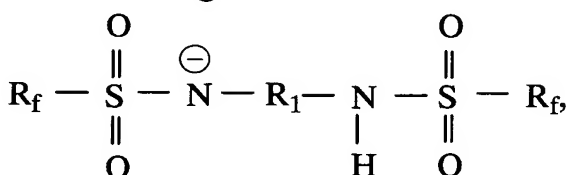
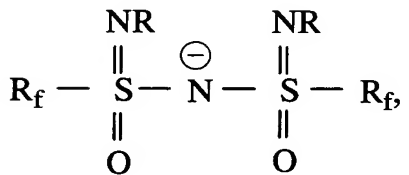
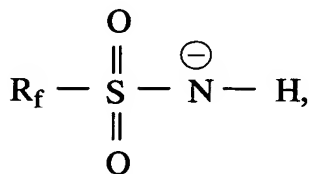
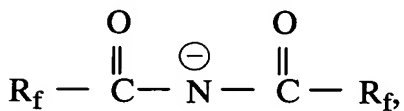
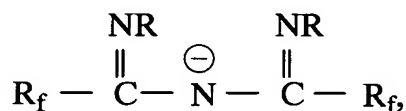
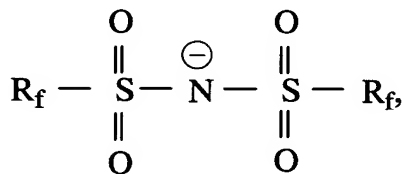
or mixtures thereof;

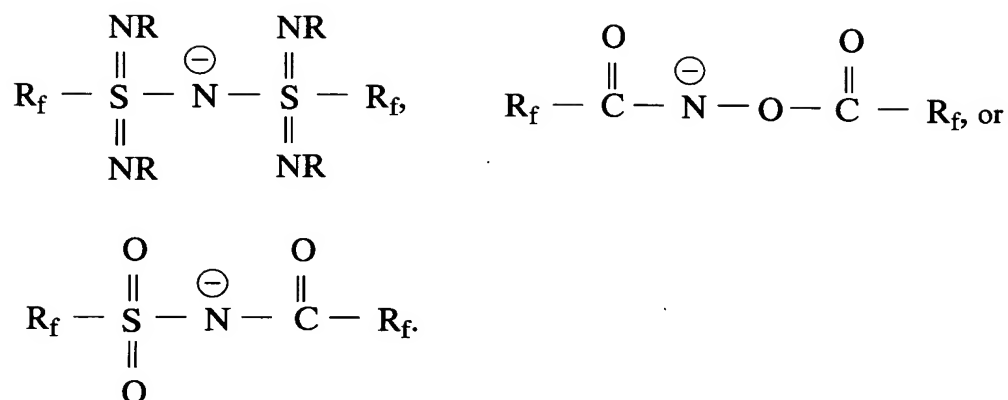
wherein said erosion inhibitor(s) used in said functional fluid composition at least partially ionize, and the effective amount of said erosion inhibitor(s) used in said functional fluid composition is essentially soluble in said functional fluid compositions;

wherein  $\text{R}_f$  is selected from fluoroalkyl, fluoroaryl, fluoroaralkyl, fluoroalkaryl, fluorocycloalkyl, fluoroalkoxyalkyl, or fluoropolyalkoxyalkyl groups; Y and Y' are independently selected from C, S, S(=A), P- $\text{R}_f$ , P-OR, or P-NRR'; A and A' are independently selected from O or NR; X is selected from N, or C-R"; Z is selected

from  $Y'(=A)-R_f$ , H,  $OC(=O)-R_f$ , or  $R_1-NH-(SO_2-R_f)$ ; R and R' are independently selected from H, alkyl, fluoroalkyl, aryl, fluoroaryl, alkaryl, aralkyl, fluoroalkaryl, or fluoroaralkyl; R" is selected from H, alkyl, fluoroalkyl, aryl, fluoroaryl, alkaryl, aralkyl, fluoroalkaryl, fluoroaralkyl, or  $-Y(=A)-R_2$ ;  $R_2$  is selected from alkyl, fluoroalkyl, aryl, fluoroaryl, alkaryl, aralkyl, fluoroalkaryl, or fluoroaralkyl;  $R_1$  is selected from unsubstituted or fluoro-substituted alkylene, cycloalkylene, alkarylene, aralkylene, or arylene groups;  $R_3$  is selected from fluoroalkylene, fluoroarylene, fluoroaralkylene, fluoroalkarylene, fluoroalkoxyalkylene, or fluoropolyalkoxyalkylene moieties; M is a cation of valence n; and n is 1, 2, 3 or 4.

2. The composition of claim 1 wherein said at least one erosion inhibitor is selected from compounds represented by the formula (I).
3. The composition of claim 2 wherein X is N.
4. The composition of claim 3 wherein Y is selected from C or S=A.
5. The composition of claim 4 wherein the anion of said at least one erosion inhibitor is selected from anions represented by the formulas:

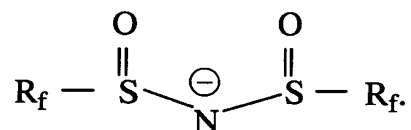




6. The composition of claim 5 wherein each R<sub>f</sub> is independently selected from perfluoroalkyl having 1 to about 24 carbon atoms, perfluorocycloalkyl having 4 to about 7 carbon atoms, perfluoroaryl having 6 to 10 carbon atoms, perfluoroaralkyl having 7 to about 34 carbon atoms, perfluoroalkaryl having 7 to about 34 carbon atoms, perfluoroalkoxyalkyl having 3 to about 21 carbon atoms, or perfluoropolyalkoxyalkyl having 3 to about 44 carbon atoms.

7. The composition of claim 3 wherein Y is S.

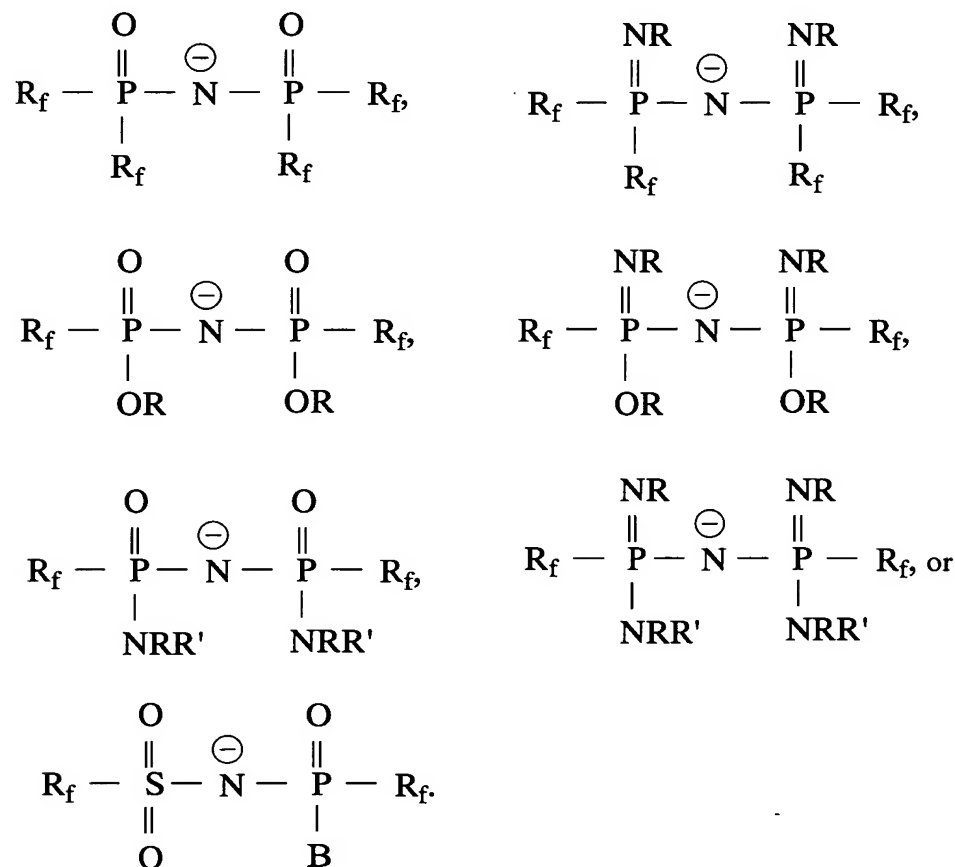
8. The composition of claim 7 wherein the anion of said at least one erosion inhibitor is represented by the formula:



9. The composition of claim 8 wherein each R<sub>f</sub> is independently selected from perfluoroalkyl having 1 to about 24 carbon atoms, perfluorocycloalkyl having 4 to about 7 carbon atoms, perfluoroaryl having 6 to 10 carbon atoms, perfluoroaralkyl having 7 to about 34 carbon atoms, perfluoroalkaryl having 7 to about 34 carbon atoms, perfluoroalkoxyalkyl having 3 to about 21 carbon atoms, or perfluoropolyalkoxyalkyl having 3 to about 44 carbon atoms.

10. The composition of claim 3 wherein at least one Y group is selected from P-R<sub>f</sub>, P-OR, or P-NRR'.

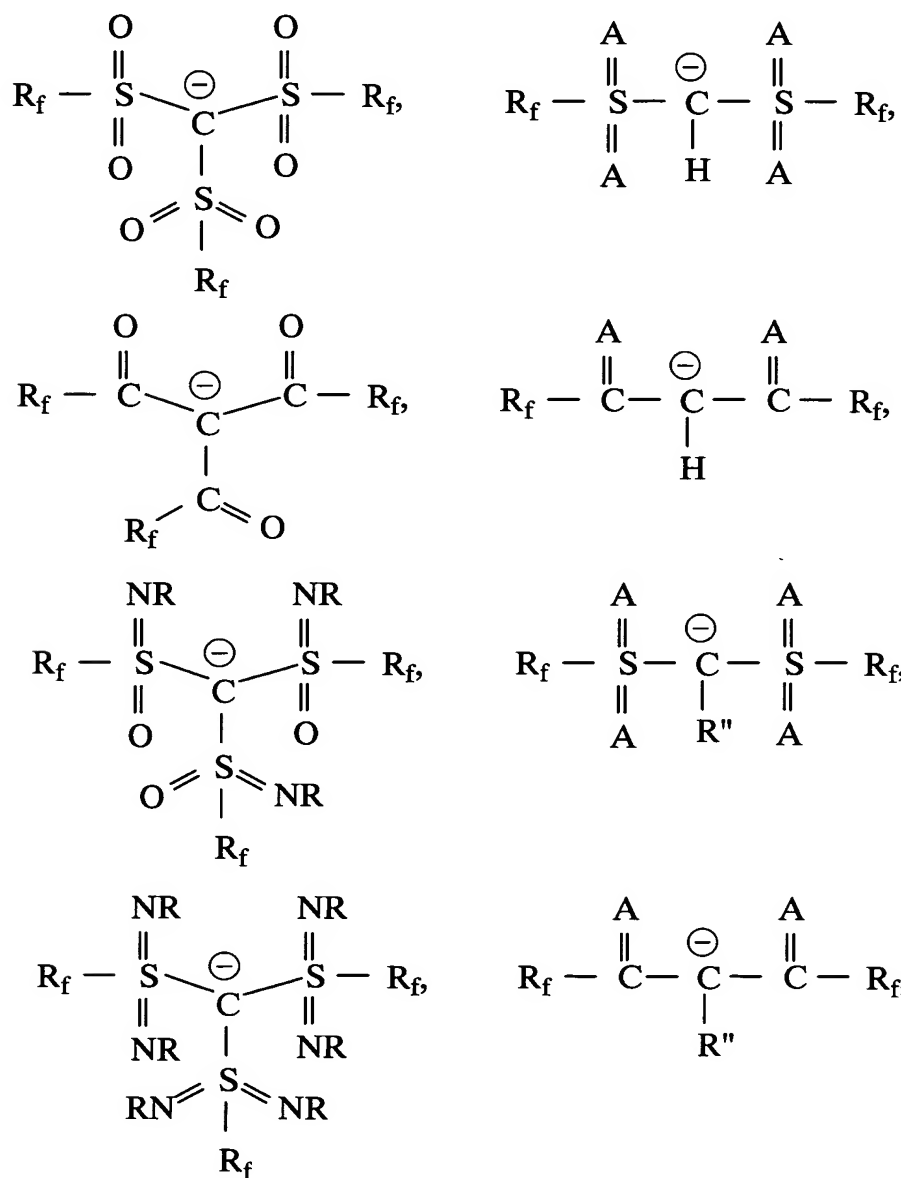
11. The composition of claim 10 wherein the anion of said at least one erosion inhibitor is selected from anions represented by the formulas:

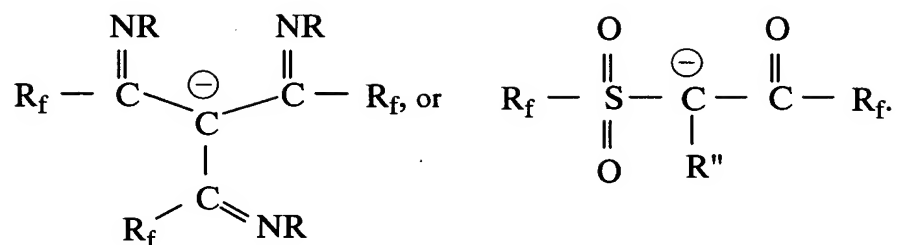


wherein B is OR or NRR'.

12. The composition of claim 11 wherein each R<sub>f</sub> is independently selected from perfluoroalkyl having 1 to about 24 carbon atoms, perfluorocycloalkyl having 4 to about 7 carbon atoms, perfluoroaryl having 6 to 10 carbon atoms, perfluoroaralkyl having 7 to about 34 carbon atoms, perfluoroalkaryl having 7 to about 34 carbon atoms, perfluoroalkoxyalkyl having 3 to about 21 carbon atoms, or perfluoropolyalkoxyalkyl having 3 to about 44 carbon atoms.

13. The composition of claim 2 wherein X is C-R".
14. The composition of claim 13 wherein Y is selected from C or S=A.
15. The composition of claim 14 wherein the anion of said at least one erosion inhibitor is selected from anions represented by the formulas:

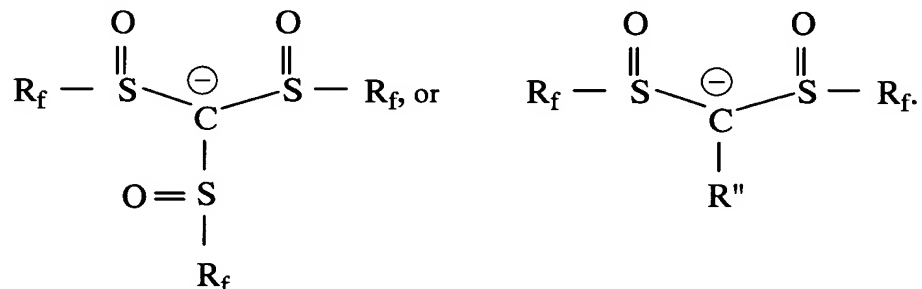




16. The composition of claim 15 wherein each  $\text{R}_f$  is independently selected from perfluoroalkyl having 1 to about 24 carbon atoms, perfluorocycloalkyl having 4 to about 7 carbon atoms, perfluoroaryl having 6 to 10 carbon atoms, perfluoroaralkyl having 7 to about 34 carbon atoms, perfluoroalkaryl having 7 to about 34 carbon atoms, perfluoroalkoxyalkyl having 3 to about 21 carbon atoms, or perfluoropolyalkoxyalkyl having 3 to about 44 carbon atoms.

17. The composition of claim 13 wherein Y is S.

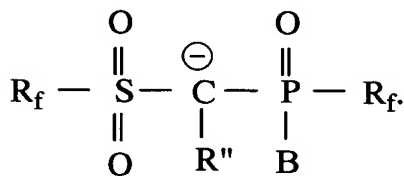
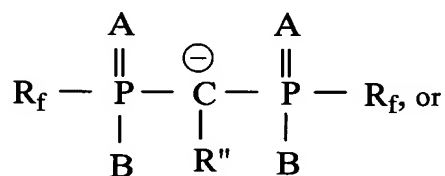
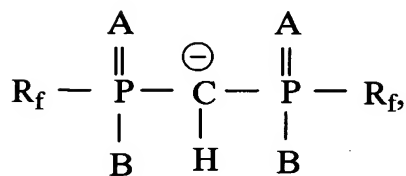
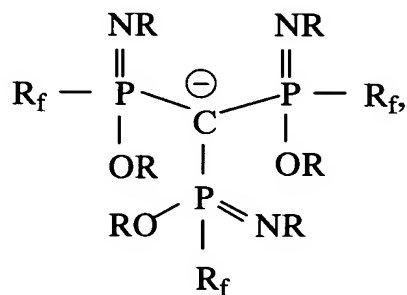
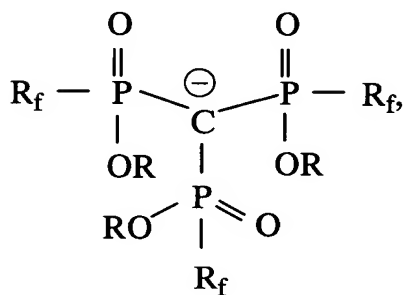
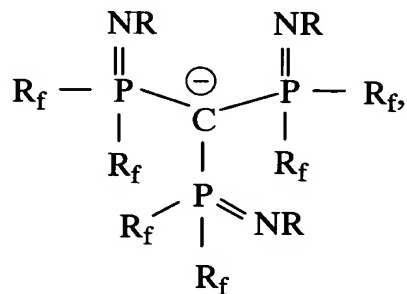
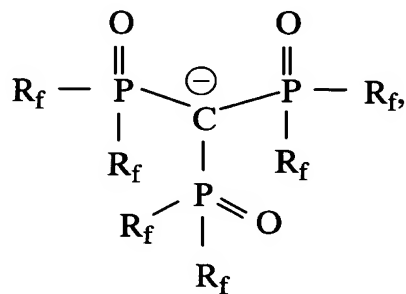
18. The composition of claim 17 wherein the anion of said at least one erosion inhibitor is selected from anions represented by the formulas:



19. The composition of claim 18 wherein each  $\text{R}_f$  is independently selected from perfluoroalkyl having 1 to about 24 carbon atoms, perfluorocycloalkyl having 4 to about 7 carbon atoms, perfluoroaryl having 6 to 10 carbon atoms, perfluoroaralkyl having 7 to about 34 carbon atoms, perfluoroalkaryl having 7 to about 34 carbon atoms, perfluoroalkoxyalkyl having 3 to about 21 carbon atoms, or perfluoropolyalkoxyalkyl having 3 to about 44 carbon atoms.

20. The composition of claim 13 wherein at least one Y group is selected from P-R<sub>f</sub>, P-OR, or P-NRR'.

21. The composition of claim 20 wherein the anion of said at least one erosion inhibitor is selected from anions represented by the formulas:



wherein B is OR or NRR'.

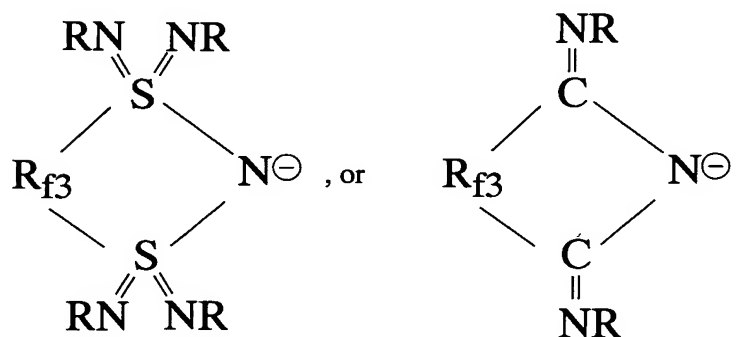
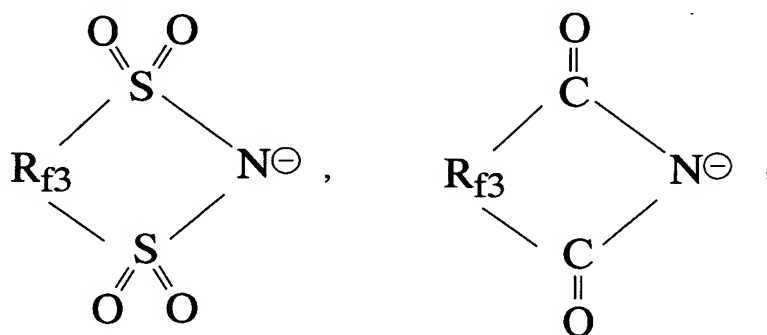
22. The composition of claim 21 wherein each  $R_f$  is independently selected from perfluoroalkyl having 1 to about 24 carbon atoms, perfluorocycloalkyl having 4 to about 7 carbon atoms, perfluoroaryl having 6 to 10 carbon atoms, perfluoroalkaryl having 7 to about 34 carbon atoms, perfluoroalkaryl having 7 to about 34 carbon atoms, perfluoroalkoxyalkyl having 3 to about 21 carbon atoms, or perfluoropolyalkoxyalkyl having 3 to about 44 carbon atoms.

23. The composition of claim 1 wherein said at least one erosion inhibitor is selected from compounds represented by the formula (II).

24. The composition of claim 23 wherein X is N.

25. The composition of claim 24 wherein Y is selected from C or S=A.

26. The composition of claim 25 wherein the anion of said at least one erosion inhibitor is selected from anions represented by the formulas:





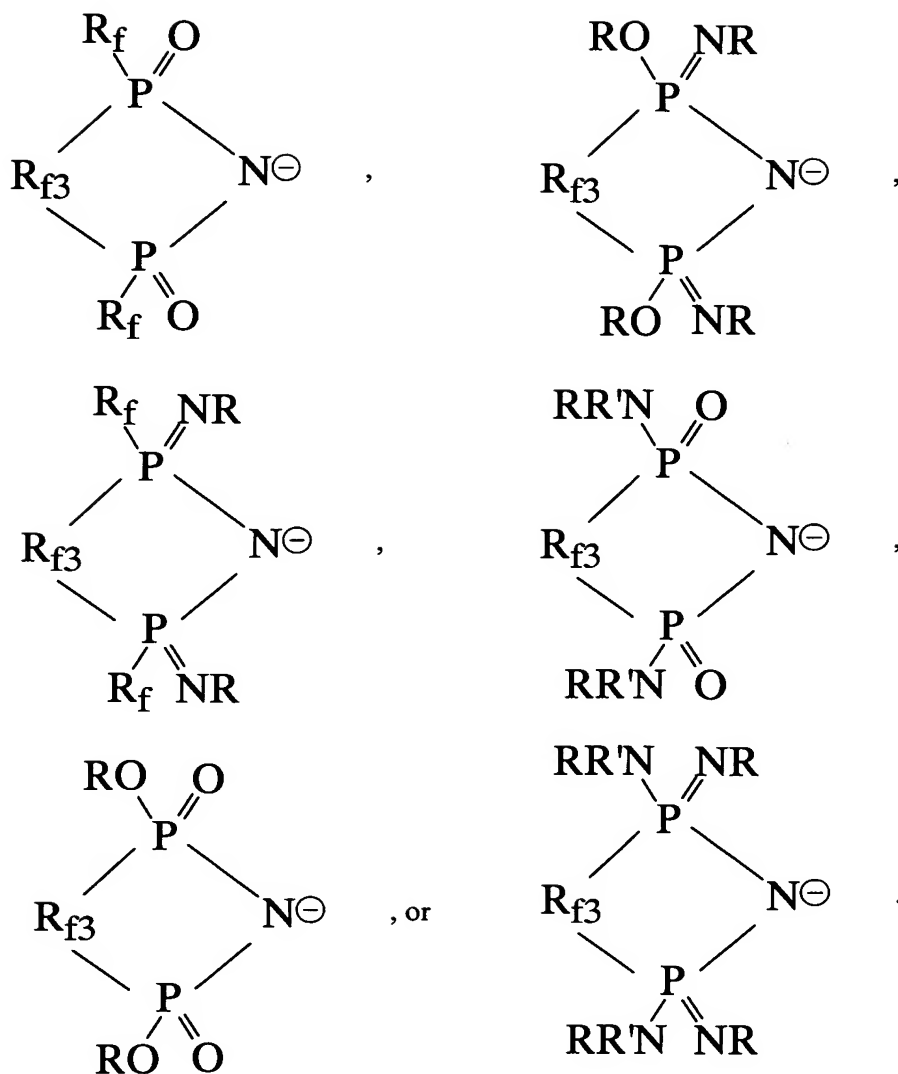
27. The composition of claim 26 wherein  $R_E$  is selected from fluoroalkylene having 2 to about 6 carbon atoms, fluoroarylene having 6 to 10 carbon atoms, fluoroaralkylene having 8 to about 16 carbon atoms, fluoroalkarylene having 8 to about 16 carbon atoms, fluoroalkoxyalkylene having 4 to about 12 carbon atoms, or fluoropolyalkoxyalkylene having 4 to about 30 carbon atoms.

28. The composition of claim 24 wherein Y is S.

29. The composition of claim 28 wherein  $R_E$  is selected from fluoroalkylene having 2 to about 6 carbon atoms, fluoroarylene having 6 to 10 carbon atoms, fluoroaralkylene having 8 to about 16 carbon atoms, fluoroalkarylene having 8 to about 16 carbon atoms, fluoroalkoxyalkylene having 4 to about 12 carbon atoms, or fluoropolyalkoxyalkylene having 4 to about 30 carbon atoms.

30. The composition of claim 24 wherein at least one Y group is selected from  $P-R_f$ ,  $P-OR$ , or  $P-NRR'$ .

31. The composition of claim 30 wherein the anion of said at least one erosion inhibitor is selected from anions represented by the formulas:

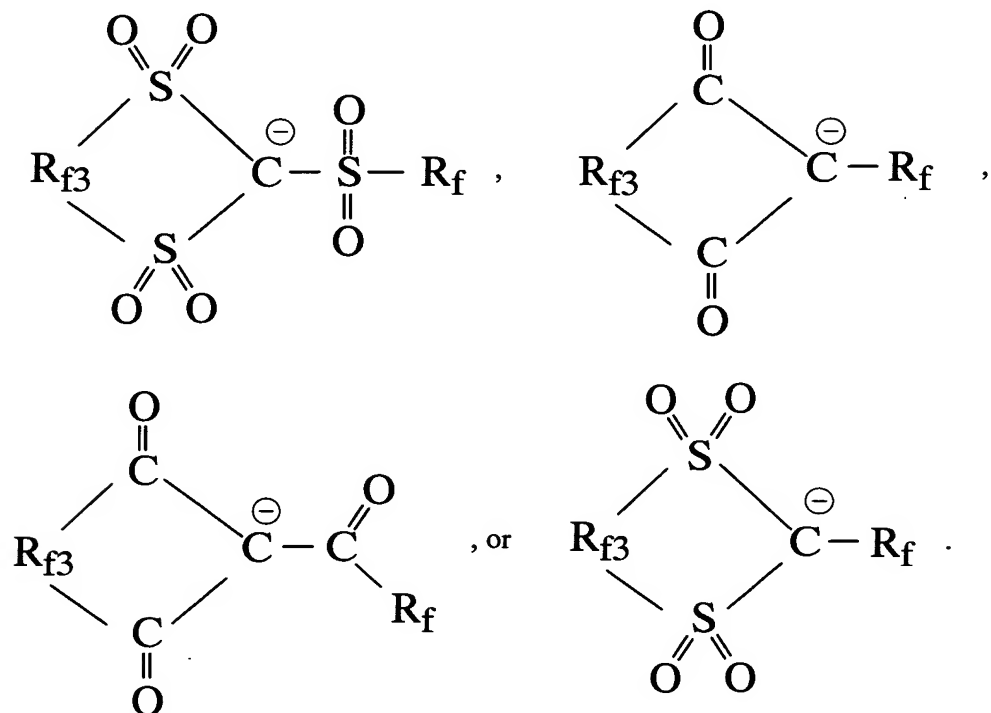


32. The composition of claim 31 wherein  $\text{R}_{f3}$  is selected from fluoroalkylene having 2 to about 6 carbon atoms, fluoroarylene having 6 to 10 carbon atoms, fluoroaralkylene having 8 to about 16 carbon atoms, fluoroalkarylene having 8 to about 16 carbon atoms, fluoroalkoxyalkylene having 4 to about 12 carbon atoms, or fluoropolyalkoxyalkylene having 4 to about 30 carbon atoms.

33. The composition of claim 23 wherein X is C-R".

34. The composition of claim 33 wherein Y is selected from C or S=A.

35. The composition of claim 34 wherein the anion of said at least one erosion inhibitor is selected from anions represented by the formulas:



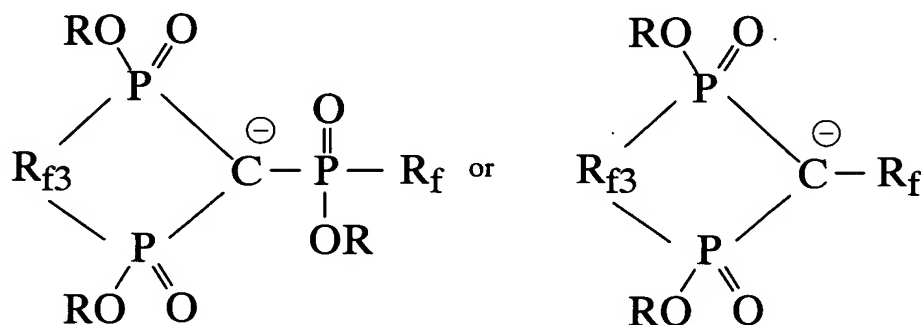
36. The composition of claim 35 wherein  $\text{R}_{\text{f3}}$  is selected from fluoroalkylene having 2 to about 6 carbon atoms, fluoroarylene having 6 to 10 carbon atoms, fluoroaralkylene having 8 to about 16 carbon atoms, fluoroalkarylene having 8 to about 16 carbon atoms, fluoroalkoxyalkylene having 4 to about 12 carbon atoms, or fluoropolyalkoxyalkylene having 4 to about 30 carbon atoms.

37. The composition of claim 30 wherein Y is S.

38. The composition of claim 37 wherein  $\text{R}_{\text{f3}}$  is selected from fluoroalkylene having 2 to about 6 carbon atoms, fluoroarylene having 6 to 10 carbon atoms, fluoroaralkylene having 8 to about 16 carbon atoms, fluoroalkarylene having 8 to about 16 carbon atoms, fluoroalkoxyalkylene having 4 to about 12 carbon atoms, or fluoropolyalkoxyalkylene having 4 to about 30 carbon atoms.

39. The composition of claim 33 wherein at least one Y group is selected from P-R<sub>f</sub>, P-OR, or P-NRR'.

40. The composition of claim 39 wherein the anion of said at least one erosion inhibitor is selected from anions represented by the formulas:



41. The composition of claim 40 wherein R<sub>f3</sub> is selected from fluoroalkylene having 2 to about 6 carbon atoms, fluoroarylene having 6 to 10 carbon atoms, fluoroaralkylene having 8 to about 16 carbon atoms, fluoroalkarylene having 8 to about 16 carbon atoms, fluoroalkoxyalkylene having 4 to about 12 carbon atoms, or fluoropolyalkoxyalkylene having 4 to about 30 carbon atoms.

42. The composition of claim 1 wherein the amount of said erosion inhibitor in said composition is at least 1 micromole erosion inhibitor per 100 g total fluid.

43. The composition of claim 42 wherein the amount of said erosion inhibitor in said composition is about 10 to about 200 micromole erosion inhibitor per 100 g total fluid.

44. The composition of claim 1 wherein M is selected from inorganic cations selected from alkali metal, alkaline earth metal, Group IIIA metal, Group IIIB metal, Group IVA metal, Group VA metal, Group VIA metal, Group VIIA metal, Group VIIIA metal, Group IB metal, Zn or B, or organic cations selected from alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted ammonium, alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted phosphonium, or alkyl substituted imidazolium.

45. The composition of claim 44 wherein M is selected from inorganic cations selected from alkali metal, alkaline earth metal, Group IIIA metal, Group IIIB metal, or zinc, or organic cations selected from alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted ammonium, alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted phosphonium, or alkyl substituted imidazolium.

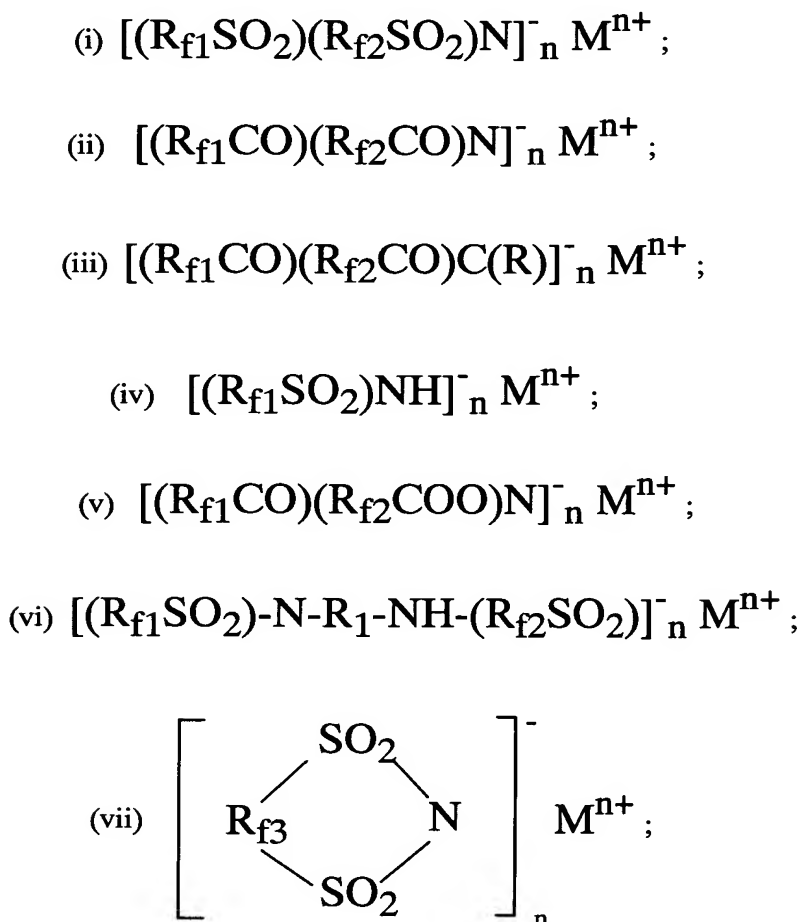
46. The composition of claim 45 wherein M is selected from lithium, sodium, potassium, cesium, magnesium, calcium, lanthanum, cerium, aluminum, zinc, tetrasubstituted ammonium cations, tetrasubstituted phosphonium cations, or alkyl substituted imidazolium cations; wherein the tetrasubstituted ammonium and phosphonium cations are independently substituted with groups selected from alkyl groups having 1 to about 24 carbon atoms, aryl groups having 6 to 10 carbon atoms, aralkyl groups having 7 to about 34 carbon atoms, or alkaryl groups having 7 to about 34 carbon atoms; wherein the total number of carbon atoms in the tetrasubstituted ammonium and phosphonium cations is 4 to about 38, and wherein alkyl substituted imidazolium cations are substituted with two to five alkyl groups, wherein each alkyl substituent is independently 1 to 22 carbon atoms, the total number of carbon atoms in the alkyl substituted imidazolium cations is 5 to about 31, and one alkyl group is attached to each nitrogen atom of the imidazolium ring.

47. The composition of claim 46 wherein M is selected from lithium, potassium, calcium, lanthanum, magnesium, aluminum, zinc, tetraalkyl substituted ammonium or tetrasubstituted phosphonium; wherein the alkyl groups are independently selected from alkyl groups having 1 to about 24 carbon atoms, and the total number of carbon atoms in the tetrasubstituted ammonium and phosphonium cations is 5 to about 21.

48. The composition of claim 1 wherein when R" is  $-Y(=A)-R_2$ ,  $-Y(=A)-R_2$  is selected from  $-C(O)R_2$  or  $-SO_2-R_2$ .

49. A functional fluid composition comprising:
- (a) a basestock comprising a phosphate ester, and

- (b) an effective erosion inhibiting amount of at least one erosion inhibitor selected from compounds represented by the formulas



or mixtures thereof;

wherein  $R_{f1}$  and  $R_{f2}$  are independently selected from fluoroalkyl, fluoroaralkyl, fluoroalkaryl, fluorocycloalkyl, fluoroaryl, fluoroalkoxyalkyl, or fluoropolyalkoxyalkyl groups;

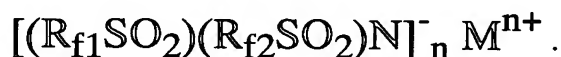
M is a cation of valence n;

n is 1, 2, 3 or 4;

R is selected from H, alkyl, fluoroalkyl, aryl, fluoroaryl, alkaryl, fluoroalkaryl, aralkyl, or fluoroaralkyl;

R<sub>1</sub> is selected from unsubstituted or fluoro-substituted alkylene, cycloalkylene, alkarylene, aralkylene, or arylene groups; and R<sub>3</sub> is selected from fluoroalkylene, fluoroarylene, fluoroaralkylene, fluoroalkarylene, fluoroalkoxyalkylene, or fluoropolyalkoxyalkylene moieties; and wherein said erosion inhibitor at least partially ionizes in said functional fluid, and said effective amount of said erosion inhibitor is essentially soluble in said functional fluid.

50. The composition of claim 49 wherein said erosion inhibitor comprises



51. The composition of claim 50 wherein R<sub>f1</sub> and R<sub>f2</sub> are independently selected from perfluoroalkyl having 1 to about 24 carbon atoms, perfluorocycloalkyl having 4 to about 7 carbon atoms, perfluoroaryl having 6 to 10 carbon atoms, perfluoroaralkyl having 7 to about 34 carbon atoms, perfluoroalkaryl having 7 to about 34 carbon atoms, perfluoroalkoxyalkyl having 3 to about 21 carbon atoms, or perfluoropolyalkoxyalkyl having 3 to about 44 carbon atoms.

52. The composition of claim 51 wherein M is selected from inorganic cations selected from alkali metal, alkaline earth metal, Group IIIA metal, Group IIIB metal, Group IVA metal, Group VA metal, Group VIA metal, Group VIIA metal, Group VIIIA metal, Group IB metal, Zn or B, or organic cations selected from alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted ammonium, alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted phosphonium, or alkyl substituted imidazolium.

53. The composition of claim 52 wherein M is selected from inorganic cations selected from alkali metal, alkaline earth metal, Group IIIA metal, Group IIIB metal, or zinc, or organic cations selected from alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted ammonium, alkyl, aryl, alkaryl, aralkyl, or

mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted phosphonium, or alkyl substituted imidazolium.

54. The composition of claim 53 wherein M is selected from alkali metal, tetraalkylammonium, tetraalkylphosphonium, alkyl substituted imidazolium, magnesium, calcium, aluminum, zinc, lanthanum, or cerium.

55. The composition of claim 54 wherein M is alkali metal, tetrabutylammonium, magnesium, calcium, lanthanum, or cerium; and R<sub>f1</sub> and R<sub>f2</sub> are independently selected from perfluoroalkyl having 1 to about 12 carbon atoms.

56. The composition of claim 49 wherein said erosion inhibitor comprises



57. The composition of claim 56 wherein R<sub>f1</sub> and R<sub>f2</sub> are independently selected from perfluoroalkyl having 1 to about 24 carbon atoms, perfluorocycloalkyl having 4 to about 7 carbon atoms, perfluoroaryl having 6 to 10 carbon atoms, perfluoroaralkyl having 7 to about 34 carbon atoms, perfluoroalkaryl having 7 to about 34 carbon atoms, perfluoroalkoxyalkyl having 3 to about 21 carbon atoms, or perfluoropolyalkoxyalkyl having 3 to about 44 carbon atoms.

58. The composition of claim 57 wherein M is selected from inorganic cations selected from alkali metal, alkaline earth metal, Group IIIA metal, Group IIIB metal, Group IVA metal, Group VA metal, Group VIA metal, Group VIIA metal, Group VIIIA metal, Group IB metal, Zn or B, or organic cations selected from alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted ammonium, alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted phosphonium, or alkyl substituted imidazolium.

59. The composition of claim 58 wherein M is selected from inorganic cations selected from alkali metal, alkaline earth metal, Group IIIA metal, Group IIIB metal, or zinc, or organic cations selected from alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted ammonium, alkyl, aryl, alkaryl, aralkyl, or



mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted phosphonium, or alkyl substituted imidazolium.

60. The composition of claim 59 wherein M is alkali metal, tetraalkylammonium, tetraalkylphosphonium, alkyl substituted imidazolium, magnesium, calcium, aluminum, zinc, lanthanum, or cerium.

61. The composition of claim 60 wherein M is lithium, tetrabutylammonium, magnesium, calcium, lanthanum, or cerium; and R<sub>f1</sub> and R<sub>f2</sub> are independently selected from perfluoroalkyl having 1 to about 12 carbon atoms.

62. The composition of claim 49 wherein said erosion inhibitor comprises



63. The composition of claim 62 wherein R<sub>f1</sub> and R<sub>f2</sub> are independently selected from perfluoroalkyl having 1 to about 24 carbon atoms, perfluorocycloalkyl having 4 to about 7 carbon atoms, perfluoroaryl having 6 to 10 carbon atoms, perfluoroaralkyl having 7 to about 34 carbon atoms, perfluoroalkaryl having 7 to about 34 carbon atoms, perfluoroalkoxyalkyl having 3 to about 21 carbon atoms, or perfluoropolyalkoxyalkyl having 3 to about 44 carbon atoms.

64. The composition of claim 63 wherein M is selected from inorganic cations selected from alkali metal, alkaline earth metal, Group IIIA metal, Group IIIB metal, Group IVA metal, Group VA metal, Group VIA metal, Group VIIA metal, Group VIIIA metal, Group IB metal, Zn or B, or organic cations selected from alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted ammonium, alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted phosphonium, or alkyl substituted imidazolium.

65. The composition of claim 64 wherein M is selected from inorganic cations selected from alkali metal, alkaline earth metal, Group IIIA metal, Group IIIB metal, or zinc, or organic cations selected from alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted ammonium, alkyl, aryl, alkaryl, aralkyl, or

mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted phosphonium, or alkyl substituted imidazolium.

66. The composition of claim 65 wherein M is lithium, tetraalkylammonium, tetraalkylphosphonium, alkyl substituted imidazolium, magnesium, calcium, aluminum, zinc, lanthanum, or cerium; R is H, alkyl having 1 to about 22 carbon atoms, or fluoroalkyl having 1 to about 24 carbon atoms; and R<sub>f1</sub> and R<sub>f2</sub> are independently selected from perfluoroalkyl having 1 to about 12 carbon atoms.

67. The composition of claim 66 wherein M is lithium, tetrabutylammonium, magnesium, calcium, lanthanum, or cerium.

68. The composition of claim 49 wherein said erosion inhibitor comprises



69. The composition of claim 68 wherein R<sub>f1</sub> is selected from perfluoroalkyl having 1 to about 24 carbon atoms, perfluorocycloalkyl having 4 to about 7 carbon atoms, perfluoroaryl having 6 to 10 carbon atoms, perfluoroaralkyl having 7 to about 34 carbon atoms, perfluoroalkaryl having 7 to about 34 carbon atoms, perfluoroalkoxyalkyl having 3 to about 21 carbon atoms, or perfluoropolyalkoxyalkyl having 3 to about 44 carbon atoms.

70. The composition of claim 69 wherein M is selected from inorganic cations selected from alkali metal, alkaline earth metal, Group IIIA metal, Group IIIB metal, Group IVA metal, Group VA metal, Group VIA metal, Group VIIA metal, Group VIIIA metal, Group IB metal, Zn or B, or organic cations selected from alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted ammonium, alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted phosphonium, or alkyl substituted imidazolium.

71. The composition of claim 70 wherein M is selected from inorganic cations selected from alkali metal, alkaline earth metal, Group IIIA metal, Group IIIB metal, or zinc, or organic cations selected from alkyl, aryl, alkaryl, aralkyl, or mixed

alkyl/aryl/alkaryl/aralkyl tetrasubstituted ammonium, alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted phosphonium, or alkyl substituted imidazolium.

72. The composition of claim 71 wherein M is alkali metal, tetraalkylammonium, tetraalkylphosphonium, alkyl substituted imidazolium, magnesium, calcium, aluminum, zinc, lanthanum, or cerium.

73. The composition of claim 72 wherein M is alkali metal, tetrabutylammonium, magnesium, calcium, lanthanum, or cerium; and R<sub>f1</sub> is perfluoroalkyl having 1 to about 12 carbon atoms.

74. The composition of claim 49 wherein said erosion inhibitor comprises



75. The composition of claim 74 wherein R<sub>f1</sub> and R<sub>f2</sub> are independently selected from perfluoroalkyl having 1 to about 24 carbon atoms, perfluorocycloalkyl having 4 to about 7 carbon atoms, perfluoroaryl having 6 to 10 carbon atoms, perfluoroaralkyl having 7 to about 34 carbon atoms, perfluoroalkaryl having 7 to about 34 carbon atoms, perfluoroalkoxyalkyl having 3 to about 21 carbon atoms, or perfluoropolyalkoxyalkyl having 3 to about 44 carbon atoms.

76. The composition of claim 75 wherein M is selected from inorganic cations selected from alkali metal, alkaline earth metal, Group IIIA metal, Group IIIB metal, Group IVA metal, Group VA metal, Group VIA metal, Group VIIA metal, Group VIIIA metal, Group IB metal, Zn or B, or organic cations selected from alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted ammonium, alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted phosphonium, or alkyl substituted imidazolium.

77. The composition of claim 76 wherein M is selected from inorganic cations selected from alkali metal, alkaline earth metal, Group IIIA metal, Group IIIB metal, or zinc, or organic cations selected from alkyl, aryl, alkaryl, aralkyl, or mixed

alkyl/aryl/alkaryl/aralkyl tetrasubstituted ammonium, alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted phosphonium, or alkyl substituted imidazolium.

78. The composition of claim 77 wherein M is lithium, tetraalkylammonium, tetraalkylphosphonium, alkyl substituted imidazolium, magnesium, calcium, aluminum, zinc, lanthanum, or cerium.

79. The composition of claim 77 wherein M is lithium, tetrabutylammonium, magnesium, calcium, lanthanum, or cerium; and  $R_{f1}$  and  $R_{f2}$  are independently selected from perfluoroalkyl having 1 to about 12 carbon atoms.

80. The composition of claim 49 wherein said erosion inhibitor comprises



81. The composition of claim 80 wherein  $R_{f1}$  and  $R_{f2}$  are independently selected from perfluoroalkyl having 1 to about 24 carbon atoms, perfluorocycloalkyl having 4 to about 7 carbon atoms, perfluoroaryl having 6 to 10 carbon atoms, perfluoroaralkyl having 7 to about 34 carbon atoms, perfluoroalkaryl having 7 to about 34 carbon atoms, perfluoroalkoxyalkyl having 3 to about 21 carbon atoms, or perfluoropolyalkoxyalkyl having 3 to about 44 carbon atoms.

82. The composition of claim 81 wherein  $R_1$  is unsubstituted or fluoro-substituted alkylene having 1 to about 8 carbon atoms, cycloalkylene having 4 to about 7 carbon atoms, arylene having 6 to 10 carbon atoms, alkarylene having 7 to about 18 carbon atoms, or aralkylene having 7 to about 18 carbon atoms.

83. The composition of claim 82 wherein  $R_1$  is selected such that the sulfonamide groups are separated by 2 or 3 carbon atoms.

84. The composition of claim 83 wherein  $R_1$  is cycloalkylene.

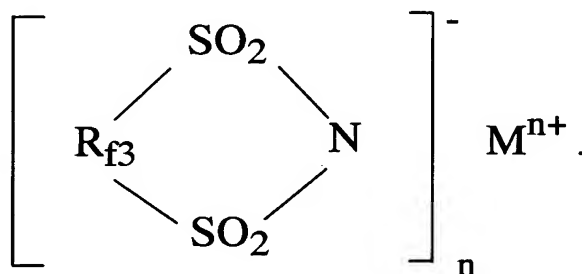
85. The composition of claim 84 wherein M is selected from inorganic cations selected from alkali metal, alkaline earth metal, Group IIIA metal, Group IIIB metal, Group IVA metal, Group VA metal, Group VIA metal, Group VIIA metal, Group VIIIA metal, Group IB metal, Zn or B, or organic cations selected from alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted ammonium, alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted phosphonium, or alkyl substituted imidazolium.

86. The composition of claim 85 wherein M is selected from inorganic cations selected from alkali metal, alkaline earth metal, Group IIIA metal, Group IIIB metal, or zinc, or organic cations selected from alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted ammonium, alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted phosphonium, or alkyl substituted imidazolium.

87. The composition of claim 86 wherein M is alkali metal, tetraalkylammonium, tetraalkylphosphonium, alkyl substituted imidazolium, magnesium, calcium, aluminum, zinc, lanthanum, or cerium.

88. The composition of claim 87 wherein M is alkali metal, tetrabutylammonium, magnesium, calcium, lanthanum, or cerium; and  $R_{f1}$  and  $R_{f2}$  are independently selected from perfluoroalkyl having 1 to about 12 carbon atoms.

89. The composition of claim 49 wherein said erosion inhibitor comprises



90. The composition of claim 89 wherein  $R_E$  is selected from fluoroalkylene having 2 to about 6 carbon atoms, fluoroarylene having 6 to 10 carbon atoms, fluoroaralkylene having 8 to about 16 carbon atoms, fluoroalkarylene having 8 to about 16 carbon atoms, fluoroalkoxyalkylene having 4 to about 12 carbon atoms, or fluoropolyalkoxyalkylene having 4 to about 30 carbon atoms.

91. The composition of claim 90 wherein  $R_E$  is selected from perfluoroalkylene having 2 to about 6 carbon atoms, perfluoroalkoxyalkylene having 4 to 6 carbon atoms, or perfluoropolyalkoxyalkylene having 4 to 6 carbon atoms.

92. The composition of claim 91 wherein M is selected from inorganic cations selected from alkali metal, alkaline earth metal, Group IIIA metal, Group IIIB metal, Group IVA metal, Group VA metal, Group VIA metal, Group VIIA metal, Group VIIIA metal, Group IB metal, Zn or B, or organic cations selected from alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted ammonium, alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted phosphonium, or alkyl substituted imidazolium.

93. The composition of claim 92 wherein M is selected from inorganic cations selected from alkali metal, alkaline earth metal, Group IIIA metal, Group IIIB metal, or zinc, or organic cations selected from alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted ammonium, alkyl, aryl, alkaryl, aralkyl, or mixed alkyl/aryl/alkaryl/aralkyl tetrasubstituted phosphonium, or alkyl substituted imidazolium.

94. The composition of claim 93 wherein M is alkali metal, tetraalkylammonium, tetraalkylphosphonium, alkyl substituted imidazolium, magnesium, calcium, aluminum, zinc, lanthanum, or cerium.

95. The composition of claim 94 wherein M is alkali metal, tetrabutylammonium, magnesium, calcium, lanthanum, or cerium; and  $R_E$  is perfluoroalkylene having 2 to about 6 carbon atoms.

96. The composition of claim 49 wherein the amount of said erosion inhibitor in said composition is at least 1 micromole erosion inhibitor per 100 g total fluid.

97. The composition of claim 96 wherein the amount of said erosion inhibitor in said composition is about 10 to about 200 micromole erosion inhibitor per 100 g total fluid.

98. The composition of claim 49 wherein said erosion inhibitor is selected from lithium, potassium, tetramethylammonium, tetrabutylammonium, tetramethylphosphonium, tetrabutylphosphonium, magnesium, calcium, or lanthanum bis(trifluoromethanesulfonyl)imide; lithium, potassium, tetramethylammonium, tetrabutylammonium, tetramethylphosphonium, tetrabutylphosphonium, magnesium, calcium, or lanthanum bis(nonafluorobutanesulfonyl)imide; lithium, potassium, tetramethylammonium, tetrabutylammonium, tetramethylphosphonium, tetrabutylphosphonium, magnesium, calcium, or lanthanum bis(perfluoroethoxyethylsulfonyl)imide; lithium, potassium, tetramethylammonium, tetrabutylammonium, tetramethylphosphonium, tetrabutylphosphonium, magnesium, calcium, or lanthanum bis(pentafluoroethanesulfonyl)imide; lithium, tetramethylammonium, tetrabutylammonium, tetramethylphosphonium, tetrabutylphosphonium, magnesium, calcium, or lanthanum bis(trifluoroacetate)imide; lithium, tetramethylammonium, tetrabutylammonium, tetramethylphosphonium, tetrabutylphosphonium or magnesium hexafluoroacetate; lithium, tetramethylammonium, tetrabutylammonium, tetramethylphosphonium, tetrabutylphosphonium, magnesium, calcium, or lanthanum trifluoromethanesulfonamide; lithium, tetramethylammonium, tetrabutylammonium, tetramethylphosphonium, tetrabutylphosphonium, magnesium, calcium, or lanthanum salts of bis(trifluoroacetyl)hydroxylamine; lithium, tetramethylammonium, tetrabutylammonium, tetramethylphosphonium, tetrabutylphosphonium, magnesium, calcium, or lanthanum trans-N,N'-1,2-cyclohexanediylbis(1,1,1-trifluoromethanesulfonamide); lithium, tetramethylammonium, tetrabutylammonium, tetramethylphosphonium, tetrabutylphosphonium, magnesium, calcium, or lanthanum cyclic-1,3-perfluoropropanedisulfonimide; lithium, tetramethylammonium,

tetrabutylammonium, tetramethylphosphonium, tetrabutylphosphonium, magnesium, calcium, or lanthanum cyclic-1,2-perfluoroethanedisulfonimide; or mixtures thereof.